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Directional Suppression of Noise from Supersonic Jets

Research by Dr. Dimitri Papamoschou at U.C. Irvine has demonstrated substantial noise reduction from supersonic jets by enveloping the lower part of the jet with a parallel stream of air. Noise towards the ground is reduced by up to 18 decibels using a simple and efficient nozzle arrangement. This project has been funded by NASA and applies to the development of future supersonic transports. The pictures below illustrate the technique: on the left, a supersonic jet emits Mach waves which are the dominant source of noise; on the right, addition of a layer of air below the jet eliminates the downward-emitted Mach waves.